Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults.

Bibliographic Source(s)

Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. Clin Infect Dis. 2012 Apr;54(8):e72-e112. [212 references] PubMed

Guideline Status

This is the current release of the guideline.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- May 12, 2016 – Fluoroquinolone Antibacterial Drugs : The U.S. Food and Drug Administration (FDA) is advising that the serious side effects associated with fluoroquinolone antibacterial drugs generally outweigh the benefits for patients with sinusitis, bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

Recommendations

Major Recommendations

Quality of evidence (high-quality, moderate-quality, low-quality, very low-quality) and strength of recommendation (strong, weak) ratings are defined at the end of the "Major Recommendations" field.

Initial Treatment

I. Which Clinical Presentations Best Identify Patients With Acute Bacterial Versus Viral Rhinosinusitis?

Recommendations

1. The following clinical presentations (any of 3) are recommended for identifying patients with acute bacterial vs. viral rhinosinusitis:
    i. Onset with persistent symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement (strong recommendation; low moderate quality evidence)
    ii. Onset with severe symptoms or signs of high fever (≥39°C [102°F]) and purulent nasal discharge or facial pain lasting for at least 3–4 consecutive days at the beginning of illness (strong recommendation; low-moderate quality)
    iii. Onset with worsening symptoms or signs characterized by the new onset of fever, headache, or increase in nasal discharge following a typical viral upper respiratory infection (URI) that lasted 5–6 days and were initially improving ("double sickening") (strong recommendation; low-moderate quality evidence).

II. When Should Empiric Antimicrobial Therapy Be Initiated in Patients With Signs and Symptoms Suggestive of Acute Bacterial Rhinosinusitis (ABRS)?

Recommendation

2. It is recommended that empiric antimicrobial therapy be initiated as soon as the clinical diagnosis of ABRS is established as defined in recommendation 1 above (strong recommendation; moderate quality evidence).

III. Should Amoxicillin Versus Amoxicillin-Clavulanate Be Used for Initial Empiric Antimicrobial Therapy of ABRS in Children?

Recommendation

3. Amoxicillin-clavulanate rather than amoxicillin alone is recommended as empiric antimicrobial therapy for ABRS in children (strong recommendation; moderate quality evidence).

IV. Should Amoxicillin Versus Amoxicillin-Clavulanate Be Used for Initial Empiric Antimicrobial Therapy of ABRS in Adults?

Recommendation

4. Amoxicillin-clavulanate rather than amoxicillin alone is recommended as empiric antimicrobial therapy for ABRS in adults (weak recommendation; low quality evidence).

V. When Is High-Dose Amoxicillin-Clavulanate Recommended During Initial Empiric Antimicrobial Therapy for ABRS in Children or Adults?

Recommendation

5. "High-dose" (2 g orally twice daily or 90 mg/kg/day orally twice daily) amoxicillin-clavulanate is recommended for children and adults with ABRS from geographic regions with high endemic rates (≥10%) of invasive penicillin-nonsusceptible (PNS) *S. pneumoniae*, those with severe infection (e.g., evidence of systemic toxicity with fever of 39°C [102°F] or higher, and threat of suppurative complications), attendance at daycare, age <2 or >65 years, recent hospitalization, antibiotic use within the past month, or who are immunocompromised (weak recommendation; moderate quality evidence).

VI. Should a Respiratory Fluoroquinolone Versus a β-Lactam Agent Be Used as First-line Agents for the Initial Empiric Antimicrobial Therapy of ABRS?

Recommendation

6. A β-lactam agent (amoxicillin clavulanate) rather than a respiratory fluoroquinolone is recommended for initial empiric antimicrobial therapy of ABRS (weak recommendation; moderate quality evidence).

VII. Besides a Respiratory Fluoroquinolone, Should a Macrolide, Trimethoprim-Sulfamethoxazole, Doxycycline, or a Second- or Third-Generation Oral Cephalosporin Be Used as Second-line Therapy for ABRS in Children or Adults?

Recommendations

7. Macrolides (clarithromycin and azithromycin) are not recommended for empiric therapy due to high rates of resistance among S. pneumoniae (~30%) (strong recommendation; moderate quality evidence).
8. Trimethoprim-sulfamethoxazole (TMP/SMX) is not recommended for empiric therapy because of high rates of resistance among both *S. pneumoniae* and *Haemophilus influenzae* (~30%–40%) (strong recommendation; moderate quality evidence).
9. Doxycycline may be used as an alternative regimen to amoxicillin-clavulanate for initial empiric antimicrobial therapy of ABRS in adults

because it remains highly active against respiratory pathogens and has excellent pharmacokinetic/pharmacodynamic (PK/PD) properties (weak recommendation; low quality evidence).

10. Second-and third-generation oral cephalosporins are no longer recommended for empiric monotherapy of ABRS due to variable rates of resistance among *S. pneumoniae*. Combination therapy with a third-generation oral cephalosporin (cefixime or cefpodoxime) plus clindamycin may be used as second-line therapy for children with non–type I penicillin allergy or from geographic regions with high endemic rates of PNS *S. pneumoniae* (weak recommendation; moderate quality evidence).

VIII. Which Antimicrobial Regimens Are Recommended for the Empiric Treatment of ABRS in Adults and Children With a History of Penicillin Allergy?

Recommendations

11. Either doxycycline (not suitable for children) or a respiratory fluoroquinolone (levofloxacin or moxifloxacin) is recommended as an alternative agent for empiric antimicrobial therapy in adults who are allergic to penicillin (strong recommendation; moderate quality evidence).
12. Levofloxacin is recommended for children with a history of type I hypersensitivity to penicillin; combination therapy with clindamycin plus a third-generation oral cephalosporin (cefixime or cefpodoxime) is recommended in children with a history of non–type I hypersensitivity to penicillin (weak recommendation; low quality evidence).

IX. Should Coverage for Staphylococcus aureus (Especially Methicillin-Resistant *S. aureus*) Be Provided Routinely During Initial Empiric Therapy of ABRS?

Recommendation

13. Although *S. aureus* (including methicillin-resistant S. aureus [MRSA]) is a potential pathogen in ABRS, on the basis of current data, routine antimicrobial coverage for S. aureus or MRSA during initial empiric therapy of ABRS is not recommended (strong recommendation; moderate quality evidence).

X. Should Empiric Antimicrobial Therapy for ABRS Be Administered for 5–7 Days Versus 10–14 Days?

Recommendations

14. The recommended duration of therapy for uncomplicated ABRS in adults is 5–7 days (weak recommendation; low-moderate quality evidence).
15. In children with ABRS, the longer treatment duration of 10–14 days is still recommended (weak recommendation; low moderate quality evidence).

XI. Is Saline Irrigation of the Nasal Sinuses of Benefit as Adjunctive Therapy in Patients With ABRS?

Recommendation

16. Intranasal saline irrigation with either physiologic or hypertonic saline is recommended as an adjunctive treatment in adults with ABRS (weak recommendation; low-moderate quality evidence).

XII. Are Intranasal Corticosteroids Recommended as an Adjunct to Antimicrobial Therapy in Patients With ABRS?

Recommendation

17. Intranasal corticosteroids (INCSs) are recommended as an adjunct to antibiotics in the empiric treatment of ABRS, primarily in patients with a history of allergic rhinitis (weak recommendation; moderate quality evidence).

XIII. Should Topical or Oral Decongestants or Antihistamines Be Used as Adjunctive Therapy in Patients With ABRS?

Recommendation

18. Neither topical nor oral decongestants and/or antihistamines are recommended as adjunctive treatment in patients with ABRS (strong recommendation; low-moderate quality evidence).

Nonresponsive Patient

XIV. How Long Should Initial Empiric Antimicrobial Therapy in the Absence of Clinical Improvement Be Continued Before Considering

Alternative Management Strategies?

Recommendation

19. An alternative management strategy is recommended if symptoms worsen after 48–72 hours of initial empiric antimicrobial therapy or fail to improve despite 3–5 days of initial empiric antimicrobial therapy (strong recommendation; moderate quality evidence).

XV. What Is the Recommended Management Strategy in Patients Who Clinically Worsen Despite 72 Hours or Fail to Improve After 3–5 Days of Initial Empiric Antimicrobial Therapy With a First-line Regimen?

Recommendation

20. An algorithm for managing patients who fail to respond to initial empiric antimicrobial therapy is shown in Figure 1 in the original guideline document. Patients who clinically worsen despite 72 hours or fail to improve after 3–5 days of empiric antimicrobial therapy with a first-line agent should be evaluated for the possibility of resistant pathogens, a noninfectious etiology, structural abnormality, or other causes for treatment failure (strong recommendation; low quality evidence).

XVI. In Managing the Patient With ABRS Who Has Failed to Respond to Empiric Treatment With Both First-line and Second-line Agents, It Is Important to Obtain Cultures to Document Whether There Is Persistent Bacterial Infection and Whether Resistant Pathogens Are Present. In Such Patients, Should Cultures Be Obtained by Sinus Puncture or Endoscopy, or Are Cultures of Nasopharyngeal Swabs Sufficient?

Recommendations

21. It is recommended that cultures be obtained by direct sinus aspiration rather than by nasopharyngeal swab in patients with suspected sinus infection who have failed to respond to empiric antimicrobial therapy (strong recommendation; moderate quality evidence).
22. Endoscopically guided cultures of the middle meatus may be considered as an alternative in adults, but their reliability in children has not been established (weak recommendation; moderate quality evidence).
23. Nasopharyngeal cultures are unreliable and are not recommended for the microbiologic diagnosis of ABRS (strong recommendation; high quality evidence).

XVII. Which Imaging Technique Is Most Useful for Patients With Severe ABRS Who Are Suspected to Have Suppurative Complications Such as Orbital or Intracranial Extension of Infection?

Recommendation

24. In patients with ABRS suspected to have suppurative complications, axial and coronal views of contrast-enhanced computed tomography (CT) rather than magnetic resonance imaging (MRI) is recommended to localize the infection and to guide further treatment (weak recommendation; low quality evidence).

XVIII. When Is Referral to a Specialist Indicated in a Patient With Presumed ABRS?

Recommendation

25. Patients who are seriously ill and immunocompromised, continue to deteriorate clinically despite extended courses of antimicrobial therapy, or have recurrent bouts of acute rhinosinusitis with clearing between episodes should be referred to a specialist (such as an otolaryngologist, infectious disease specialist, or allergist) for consultation. As this is a "good clinical practice" statement rather than a recommendation, it is not further graded.

Definitions:

Strength of Recommendations and Quality of the Evidence			
Strength of Recommendation and Quality of Evidence	Clarity of Balance between Desirable and Undesirable Effects	Methodologic Quality of Supporting Evidence (examples)	Implications
Strong Recommendation, High-quality	Desirable effects clearly outweigh undesirable effects, or vice versa	Consistent evidence from well-performed randomized controlled trials (RCTs) or exceptionally	Recommendation can apply to most patients in most circumstances. Further research is unlikely to change confidence in the estimate

Strength of Recommendations and Quality of the Evidence			
Strength of Recommendation and Quality of Evidence	Clarity of Balance between Desirable and Undesirable Effects	Methodologic Quality of Supporting Evidence (examples)	Implications
Strong Recommendation, Moderate-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence from RCTs with important limitations (inconsistent results, methodologic flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Recommendation can apply to most patients in most circumstances; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate.
Strong Recommendation, Low-quality evidence	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence	Recommendation may change when higher-quality evidence becomes available; further research (if performed) is likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate.
Strong Recommendation, Very low-quality evidence (very rarely applicable)	Desirable effects clearly outweigh undesirable effects, or vice versa	Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence	Recommendation may change when higher-quality evidence becomes available; any estimate of effect for at least 1 critical outcome is very uncertain
Weak Recommendation, High-quality evidence	Desirable effects closely balanced with undesirable effects	Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies	The best action may differ depending on circumstances or patients or societal values. Further research is unlikely to change confidence in the estimate of effect
Weak Recommendation, Moderate-quality evidence	Desirable effects closely balanced with undesirable effects	Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from unbiased observational studies	Alternative approaches likely to be better for some patients under some circumstances. Further research (if performed) is likely to have an important impact on confidence in the estimate of effect and may change the estimate
Weak Recommendation, Low-quality evidence	Uncertainty in the estimates of desirable effects, harms, and burden; desirable effects, harms, and burden may be closely balanced	Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws, or indirect evidence	Other alternatives may be equally reasonable. Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate
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Clinical Algorithm(s)

An algorithm is provided in the original guideline document for the management of acute bacterial rhinosinusitis.

Scope

Disease/Condition(s)

Acute bacterial rhinosinusitis

Guideline Category

Diagnosis

Management

Treatment

Clinical Specialty

Allergy and Immunology

Emergency Medicine

Family Practice

Infectious Diseases

Internal Medicine

Otolaryngology

Pediatrics

Surgery

Intended Users

Advanced Practice Nurses

Hospitals

Nurses

Physician Assistants

Physicians

Respiratory Care Practitioners

Guideline Objective(s)

To provide evidence-based guidelines for the diagnosis and initial management of suspected acute bacterial rhinosinusitis in adults and children

Target Population

Children and adults with suspected acute bacterial rhinosinusitis

Interventions and Practices Considered

Diagnosis/Evaluation

1. Identification of clinical presentation of bacterial versus viral rhinosinusitis
2. Evaluation for resistant pathogens or structural abnormality in patients non-responsive to therapy

- Culture of direct sinus aspiration
- Endoscopically guided culture of middle meatus
- Contrast enhance computed tomography, (as indicated)

Management/Treatment

1. Initiation of empiric anti-microbial therapy
    - Amoxicillin-clavulanate
    - High dose amoxicillin-clavulanate
    - Doxycycline
    - Third generation oral cephalosporin (cefixime or cefpodoxime) plus clindamycin, as indicated
2. Empiric treatment in adults and children with penicillin allergy
    - Doxycycline (not suitable for children)
    - Respiratory fluoroquinolone (levofloxacin, moxifloxacin)
    - Combination therapy (clindamycin plus third generation oral cephalosporin [cefixime or cefpodoxime])
3. Duration of therapy before considering alternative management strategies
    - If symptoms worsen after 48–72 hours of initial empiric antimicrobial therapy
    - If symptoms fail to improve despite 3–5 days of initial empiric antimicrobial therapy
4. Intranasal saline irrigation (physiologic or hypotonic saline)
5. Intranasal corticosteroids
6. Referral to specialist

Major Outcomes Considered

- Symptom improvement
- Adverse events associated with treatment
- Clinical response rate
- Bacterial antibiotic resistance

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The writing group identified up-to-date valid systematic reviews from the MEDLINE database and the Cochrane Library, and also, in selected cases, reference lists of the most recent narrative reviews or studies on the topic. Unless specified otherwise, the search period was 1980–2011 and the search was restricted to the English literature. Articles were also retrieved by searches for clinical diagnosis, symptoms and signs, microbiology, antimicrobial resistance, CT scan, MRI, intranasal steroids, saline irrigations, and complications. The panel members contributed reference lists in these areas. The quality of evidence was evaluated after the literature review. The writing group based their judgments on these systematic reviews and, if applicable, on additional studies published after the reviews were done. When no systematic review was available, the writing group evaluated the original studies to inform judgments about the quality of the underlying evidence from a crude examination of these studies. Primary key search terms were as follows:

- Amoxicillin-clavulanic acid
- Antimicrobial resistance
- Appropriate antimicrobial

- β-lactams
- Decongestants
- Fluoroquinolones
- *H. influenzae*
- Hypertonic and isotonic saline
- *M. catarrhalis*
- Pathogens
- Rhinosinusitis (children and adults)
- Sinusitis
- Sinus aspiration
- *S. pneumoniae*
- Stewardship
- Steroids
- Upper respiratory

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus (Delphi Method)

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

See the "Rating Scheme for the Strength of the Recommendations" field.

Methods Used to Analyze the Evidence

Meta-Analysis of Randomized Controlled Trials

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The quality of evidence reflects the extent to which the confidence in estimates of the effects is adequate to support a particular recommendation. Hence, judgments about the quality of evidence are always made relative to the specific context in which this evidence is used. The GRADE (Grades of Recommendation Assessment, Development and Evaluation) system categorizes the quality of evidence as high, moderate, low, or very low (See the "Rating Scheme for the Strength of the Recommendations" field.). High-quality evidence indicates that further research is very unlikely to change the guideline developer's confidence in the estimate of effects. Moderate-quality evidence indicates that further research is likely to have an important impact on the guideline developer's confidence in the estimate of effect and may change the estimate. Low quality evidence suggests that further research is very likely to have an important impact on the guideline developer's confidence in the estimate of effect or change the estimate. Very low-quality evidence indicates that any estimate of effect is very uncertain. Expert opinion is not a category of evidence. Expert opinion represents an interpretation of evidence ranging from observations in an expert's own practice (uncontrolled observations, case reports) to the interpretation of randomized controlled trials (RCTs) and meta-analyses known to the expert in the context of other experiences and knowledge.

The quality of evidence may be upgraded or downgraded by additional considerations. For example, high-quality evidence based on RCTs may be downgraded due to limitations in study design or implementation, imprecise estimates (eg, wide confidence intervals), unexplained variability in

results, indirectness of the evidence, and publication bias. Conversely, low-quality evidence based on observational studies may warrant upgrading if the magnitude of the treatment effect is very large, if there is evidence of a dose–response relation, or if all plausible biases would decrease the magnitude of an apparent treatment effect. To facilitate this process, a software program (GRADEprofiler) was used to produce evidence tables including the assessment of quality of evidence and a summary of findings (the effect size in the intervention and comparison groups, and the magnitude of relative and absolute effects). Thus the evidence profile is a transparent summary of evidence on which those making recommendations can base their judgments.

Statistical Analysis and Evidence Summary Profiles

Statistical analysis including relative risk (RR), odds ratios (ORs), 95% confidence intervals (CIs), positive and negative predictive values, and v2 statistics was performed using the Prism 4.0 software package (GraphPad, San Diego, California). Evidence summary profiles were generated using GRADEprofiler 3.2.2 software (GRADE Working Group).

Methods Used to Formulate the Recommendations

Expert Consensus

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

A panel of multidisciplinary experts in the management of acute bacterial rhinosinusitis (ABRS) in children and adults was convened in April 2008. The panel consisted of internists and pediatricians as well as infectious disease and emergency physicians and an otolaryngology specialist. Panel participants included representatives from the American College of Physicians, Society of Academic Emergency Medicine, Centers for Disease Control and Prevention, the GRADE (Grades of Recommendation Assessment, Development and Evaluation) Working Group, and the Infectious Diseases Society of America (IDSA) Standards and Practice Guidelines Committee.

The strength of recommendation is not solely linked to the quality of evidence. Rather, the key determinant of the strength of a recommendation is the balance between the desirable and undesirable outcomes (i.e., risks vs benefits) for a clinically important question. This implies a careful selection of the important clinical questions to be addressed and the key outcomes to be evaluated. Other factors that determine the strength of recommendation are the resource implications and variability in values and preferences for or against an alternative management strategy considered by the guideline panel. Only 2 grades are assigned for the strength of recommendation in GRADE: strong or weak. A strong recommendation reflects a high degree of confidence that the desirable effects of an intervention outweigh the undesirable effects. A weak recommendation denotes that the desirable effects of adhering to a recommendation probably outweigh the undesirable effects, but the panel is less confident. The GRADE approach offers a structured, systematic, and transparent process to formulate recommendations based on explicit criteria that go beyond just the quality of available evidence.

A series of monthly teleconferences was conducted in which a list of clinical questions to be addressed by the guideline was generated, discussed, and prioritized. It was determined by the panel that because the entity of chronic rhinosinusitis is so fundamentally different from acute rhinosinusitis in patient populations, epidemiology, pathophysiology, and management strategies, the current guideline would only address issues related to the initial management of ABRS in both adults and children. Consensus among the panel members in grading the quality of evidence and strength of recommendations was developed using the GRADE "grid" technique and the Delphi method. The draft recommendations were circulated to all panel members and each member was asked to provide an opinion regarding their assessment of the recommendations (either strongly agree, agree with reservation, or reject) along with the reasons for their judgment. After each round, an impartial facilitator provided an anonymous summary of the independent panel responses as well as their justification. Panelists were encouraged to revise their earlier answers in light of the replies from the other members of the panel. The process was repeated until consensus was developed for 80% of the responses for each clinical question. Because this was the first guideline to use the GRADE system, preparation of the evidence profile was assisted by a GRADE representative on the panel who provided expert advice on methodological issues throughout the guideline development. The panel met on 2 additional occasions and held multiple teleconferences to complete the work of the guideline. The purpose of the teleconferences was to discuss the questions, distribute writing assignments, and finalize recommendations.

Rating Scheme for the Strength of the Recommendations

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Cost Analysis

The total direct healthcare costs attributed to a primary medical diagnosis of sinusitis in 1996 were estimated to exceed $3 billion per year. A recent national survey of antibiotic prescriptions for upper respiratory infections (URI) in the outpatient setting showed that antibiotics were prescribed for 81% of adults with acute rhinosinusitis despite the fact that approximately 70% of patients improve spontaneously in placebo-controlled randomized clinical trials. Thus, over prescription of antibiotics is a major concern in the management of acute rhinosinusitis, largely due to the difficulty in differentiating ABRS from a viral URI. To address these issues, several practice guidelines for the treatment of ABRS have been published by various professional organizations in the United States and Canada within the past decade, including the American College of Physicians (2001), the American Academy of Pediatrics (2001), the Rhinosinusitis Initiative (representing the American Academy of Allergy, Asthma and Immunology; the American Academy of Otolaryngic Allergy; the American College of Allergy, Asthma and Immunology; the American Academy of Otolaryngology–Head and Neck Surgery [AAO-HNS]; and the American Rhinologic Society) (2004), the Sinus and Allergy Health Partnership (2004), the Joint Council of Allergy, Asthma and Immunology (2005), the Agency for Health Care Research and Quality (2005), and more recently by the AAO-HNS (2007), the Institute for Clinical Systems Improvement (2008), and the Canadian Society of Otolaryngology–Head and Neck Surgery (2011).

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

All members of the panel participated in the preparation and review of the draft guideline. Feedback from external peer reviews was obtained. The guideline was reviewed and approved by the Infectious Diseases Society of America (IDSA) Standards and Practice Guidelines Committee and the Board of Directors prior to dissemination.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of acute bacterial rhinosinusitis in children and adults

Potential Harms

- Adoption of more stringent clinical criteria for the diagnosis of Acute Bacterial Rhinosinusitis (ABRS) may result in delay of appropriate antimicrobial therapy in some patients.
- Prompt antimicrobial therapy may result in overuse of antibiotics, enhanced cost, and risk of adverse effects in those patients who do have true bacterial infection but mild disease. However, the patient selection criteria specified in recommendation 1 make this possibility less likely.
- The combination of clavulanate with amoxicillin for empiric therapy of ABRS adds to the cost, increased likelihood of adverse effects due to diarrhea, and rare instances of hypersensitivity reaction due to clavulanate.
- Standard-dose amoxicillin-clavulanate is inadequate for the treatment of ABRS caused by invasive penicillin-nonsusceptible (PNS) *S.*

pneumoniae and the rare occurrence of ampicillin-resistant β-lactamase–negative *H. influenza*.

- Fluoroquinolones are associated with a variety of adverse effects including central nervous system events (seizures, headaches, dizziness, sleep disorders), peripheral neuropathy, photosensitivity with skin rash, disorders of glucose homeostasis (hypoglycemia and hyperglycemia), prolongation of QT interval, hepatic dysfunction, and skeletomuscular complaints. Risk of Achilles tendon rupture is particularly high in the adult population (estimated prevalence rate, 15–20 per 100 000), particularly among those with advancing age and antecedent steroid therapy. The respiratory fluoroquinolones are more costly than doxycycline, and escalating resistance with increased usage is a concern. Similar to other fluoroquinolones, moxifloxacin has been associated with severe hepatotoxicity. Doxycycline is not recommended for children ≤8 years of age due to staining of teeth. Oral third-generation cephalosporins are relatively costly and may cause diarrhea or hypersensitivity reactions. Clindamycin is an important cause of Clostridium difficile–associated enterocolitis, and clindamycin resistance is common among *S. pneumoniae* serotype 19A isolates (~31%).
- The long-term safety of respiratory fluoroquinolones in children requires further evaluation.
- Obtaining cultures of the middle meatus or sinus aspirates may not be well tolerated in children.
- Shorter courses of antimicrobial therapy may result in relapse or recurrent infection, particularly among the elderly and those with underlying disease or who are immunocompromised.
- Nasal burning, irritation, and nausea were the most frequently reported adverse effects from intranasal saline irrigation (7%–32% in various studies). In addition, saline irrigants should be prepared from sterile or bottled water in light of recent reports of primary amebic encephalitis from contaminated tap water used for saline nasal irrigation. Nasal saline irrigation is less well tolerated in babies and young children and may make them cry, undoing any potential benefit.
- Short-term risks of intranasal corticosteroids (INCSs) are minimal but may include susceptibility to oral candidiasis. Routine administration of INCSs will clearly increase the cost of treating ABRS. Use of any intranasal medications in children may not be well tolerated.
- Premature discontinuation of first-line antimicrobial therapy in favor of second-line agents with broader antimicrobial coverage may promote overuse of antibiotics and increase costs as well as adverse effects.
- Sinus culture is invasive, time consuming, and not well tolerated by patients.
- Computed tomography (CT) scanning results in low levels of radiation exposure, which may lead to radiation-induced illnesses if multiple scans are obtained. With either CT or Magnetic resonance imaging (MRI), there is a potential risk of allergic reactions to the contrast material, and appropriate precaution should be undertaken in patients with renal impairment.
- Delay in appropriate referral to specialists may prolong illness, result in chronic disease, and occasionally lead to catastrophic consequences if life-threatening complications are not recognized. Unnecessary referral adds to the burden of healthcare costs.

Qualifying Statements

Qualifying Statements

Guidelines cannot always account for individual variation among patients. They are not intended to supplant physician judgment with respect to particular patients or special clinical situations. The Infectious Diseases Society of America considers adherence to this guideline to be voluntary, with the ultimate determination regarding their application to be made by the physician in light of each patient's individual circumstances.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. Clin Infect Dis. 2012 Apr;54(8):e72-e112. [212 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

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Guideline Developer(s)

Infectious Diseases Society of America - Medical Specialty Society

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Guideline Committee

Expert Panel

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Financial Disclosures/Conflicts of Interest

All members of the expert panel complied with the Infectious Diseases Society of America (IDSA) policy regarding conflicts of interest, which requires disclosure of any financial or other interest that might be construed as constituting an actual, potential, or apparent conflict. Members of the expert panel completed a conflicts of interest disclosure statement from the IDSA. Information was requested regarding employment, consultancies, stock ownership, honoraria, research funding, expert testimony, and membership on company advisory committees. The panel made decisions on a case-by-case basis as to whether an individual's role should be limited as a result of a perceived conflict. No limiting conflicts were identified.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available in Portable Document Format (PDF) from the Infectious Diseases Society of America (IDSA) Web site .

Print copies: Available from Infectious Diseases Society of America, 1300 Wilson Boulevard, Suite 300, Arlington, VA 22209.

Availability of Companion Documents

Suggested performance measures are provided in the original guideline document .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on July 6, 2012. The information was verified by the guideline developer on July 30, 2012. This summary was updated by ECRI Institute on October 25, 2013 following the U.S. Food and Drug Administration advisory on Fluoroquinolone Antibacterial Drugs. This summary was updated by ECRI Institute on May 18, 2016 following the U.S. Food and Drug Administration advisory on Fluoroquinolone Antibacterial Drugs.

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